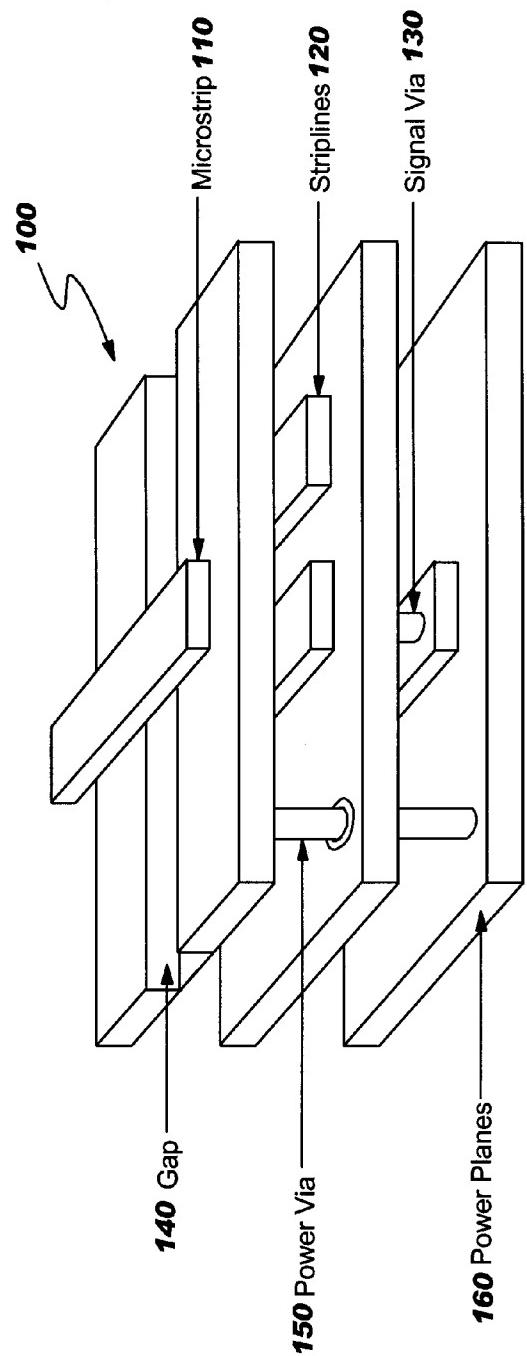


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FIG. 1

Common Microelectronic Package Structures



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FIG. 2

Cell Dimensions

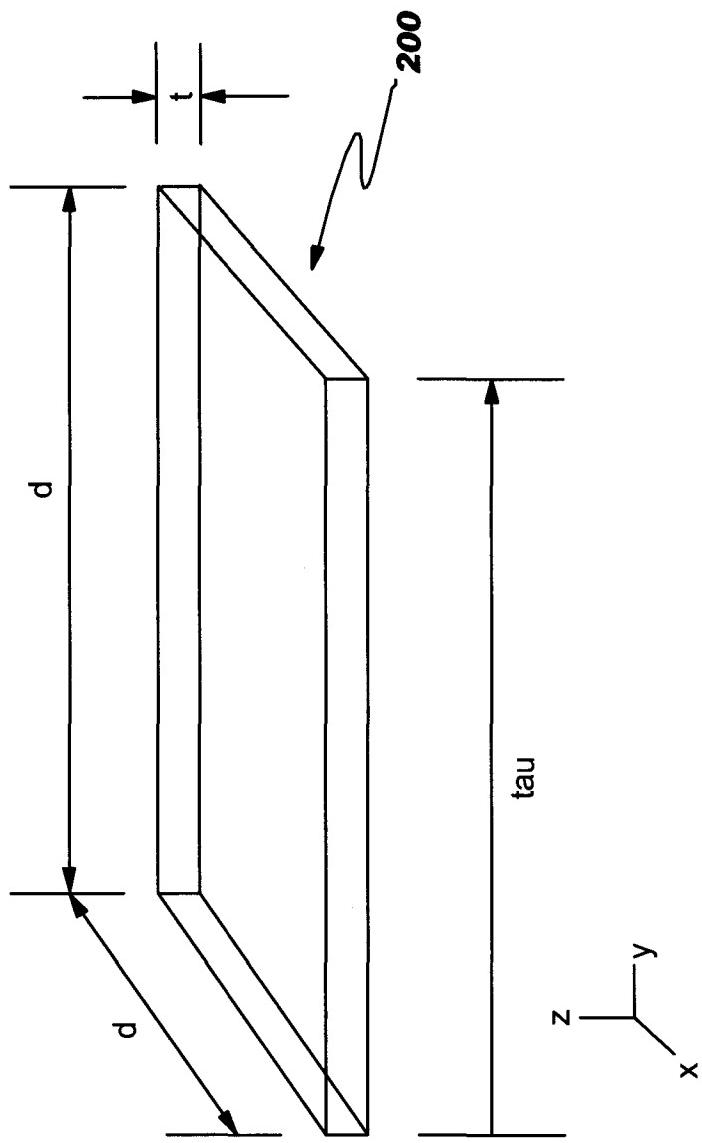


FIG. 3A
Original Geometry (n=3)

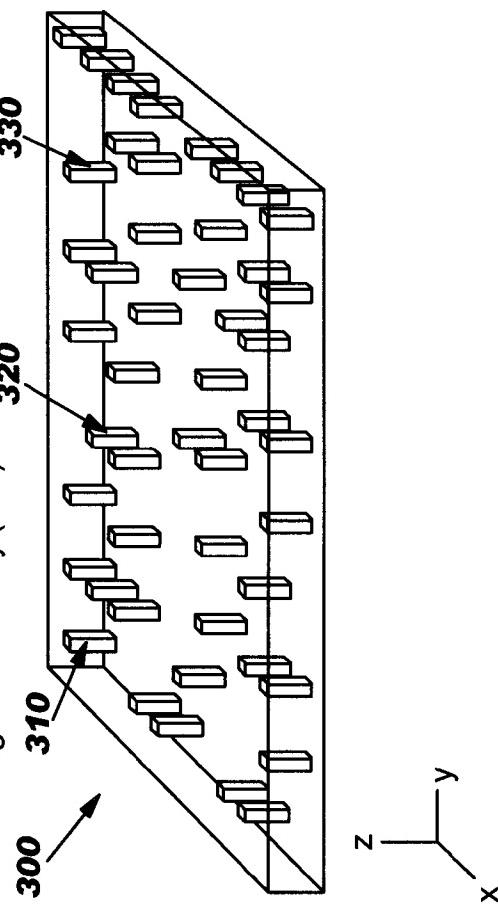
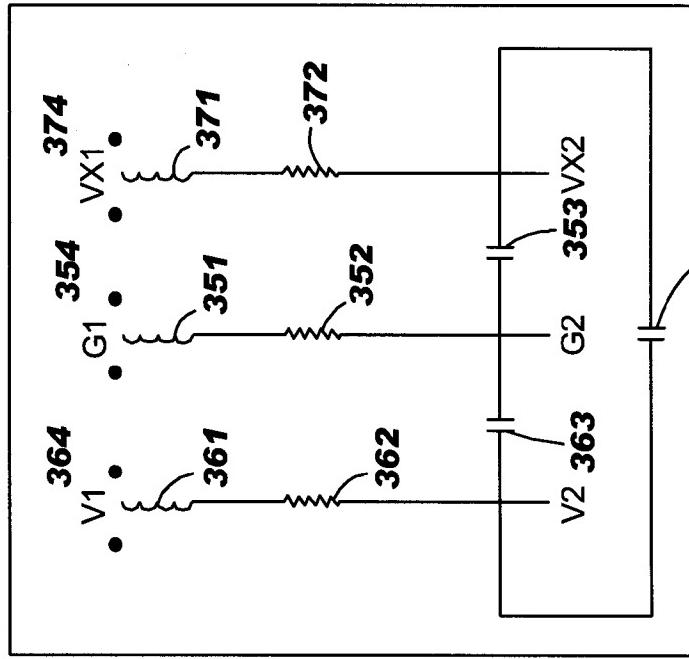


FIG. 3C

Equivalent Circuit (n=3)

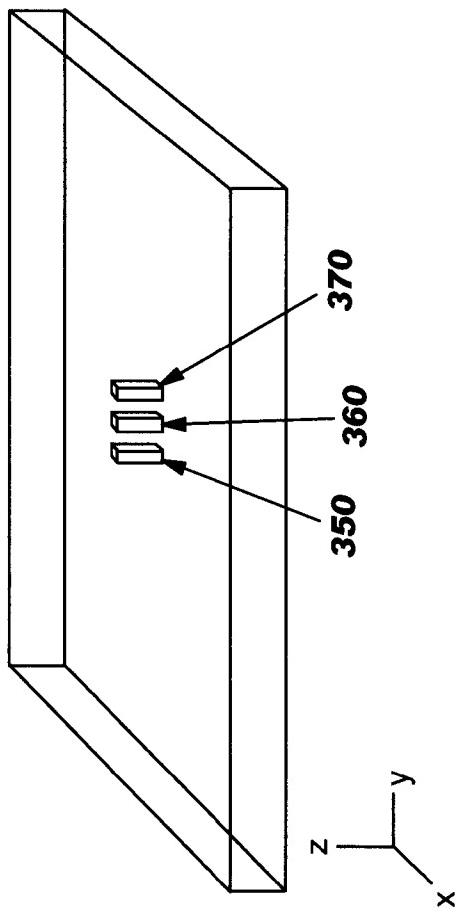


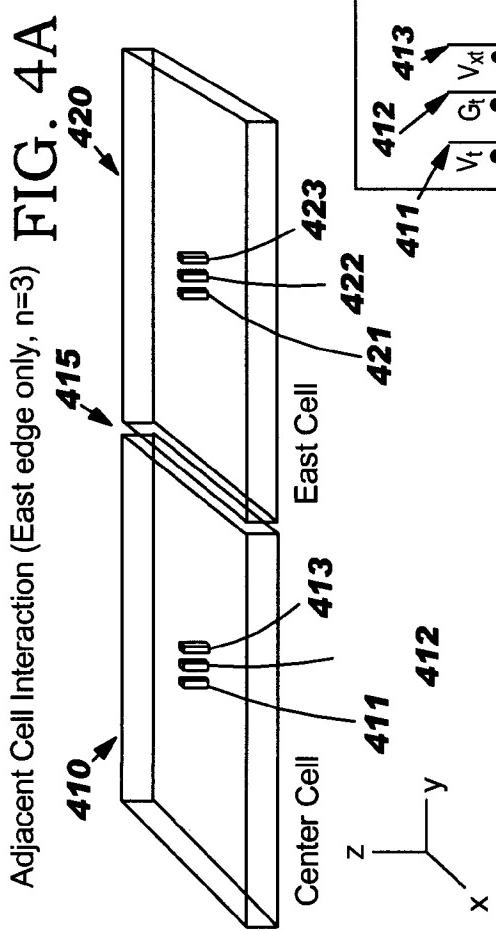
340

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FIG. 3B

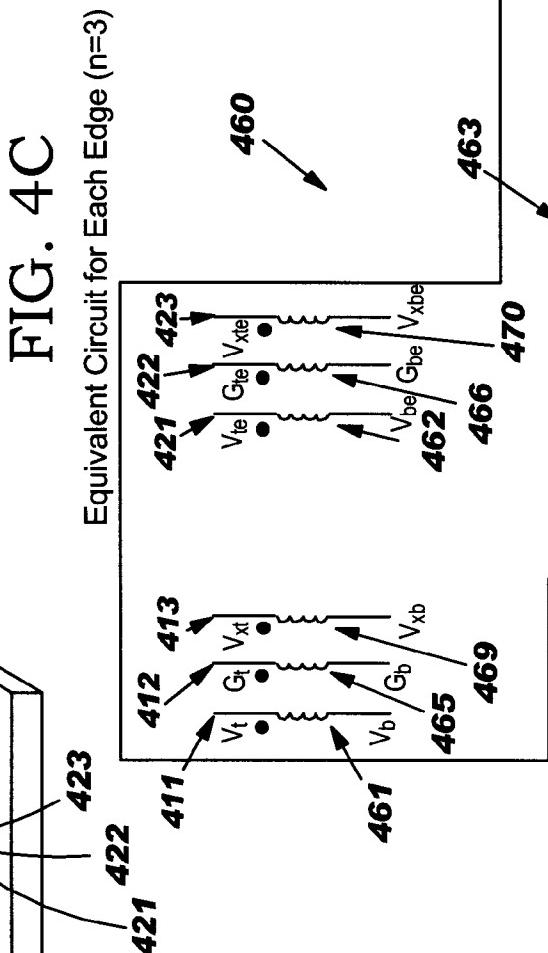
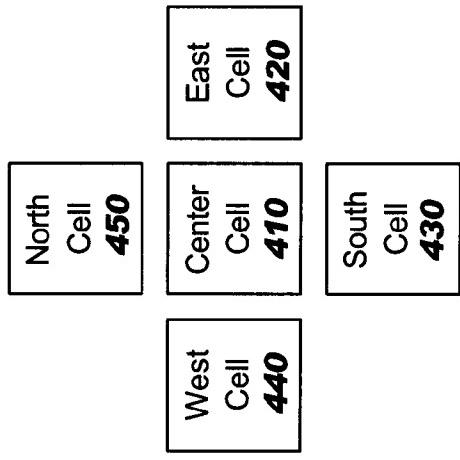
Equivalent Geometry (n=3)



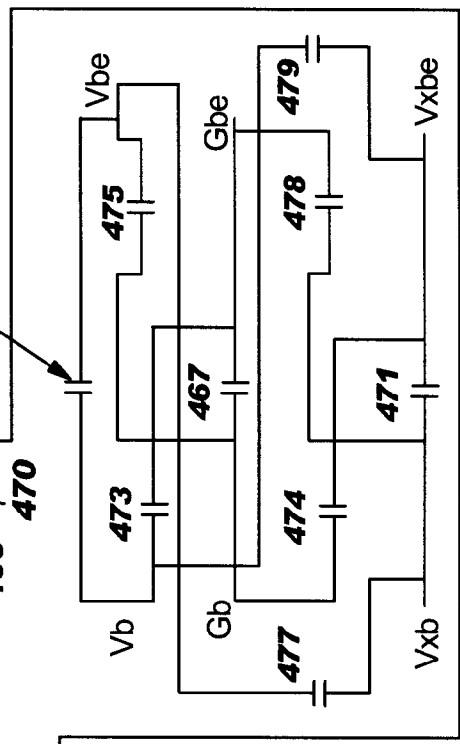


Inter-Cell Power
Vias Equivalent

FIG. 4B
Top View (all edges)

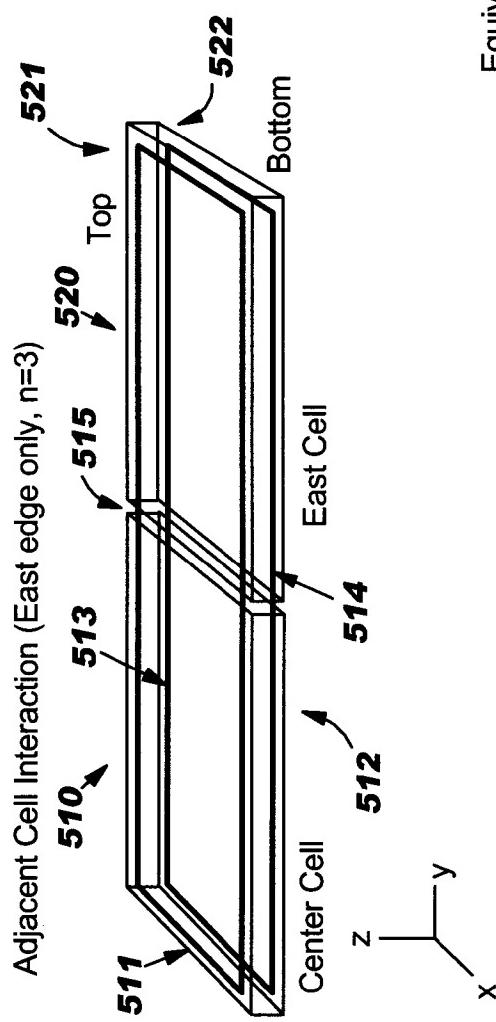


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Intra- and Inter-Cell Power Plane Equivalent

FIG. 5A



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FIG. 5B

Equivalent Circuit for Each Edge (n=2)

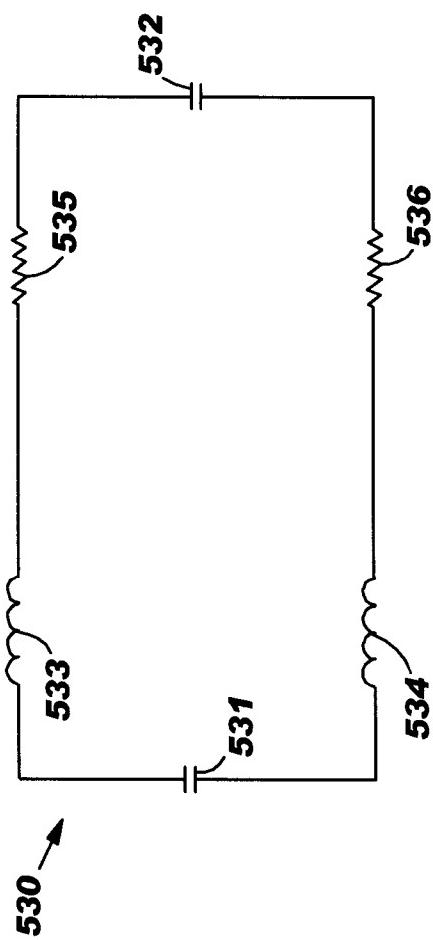


FIG. 5C

Two RLC equivalents of power-plane cell

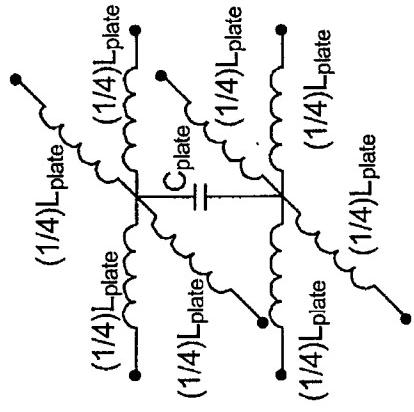
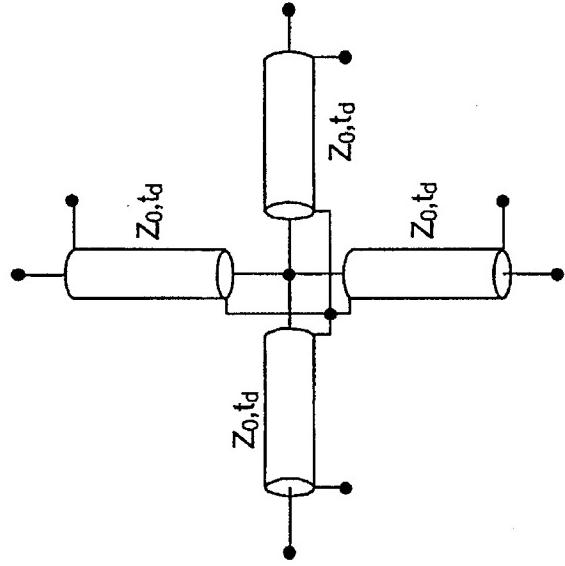


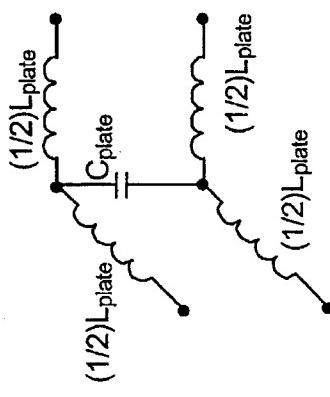
FIG. 5D

Transmission-line equivalent
of power-plane cell



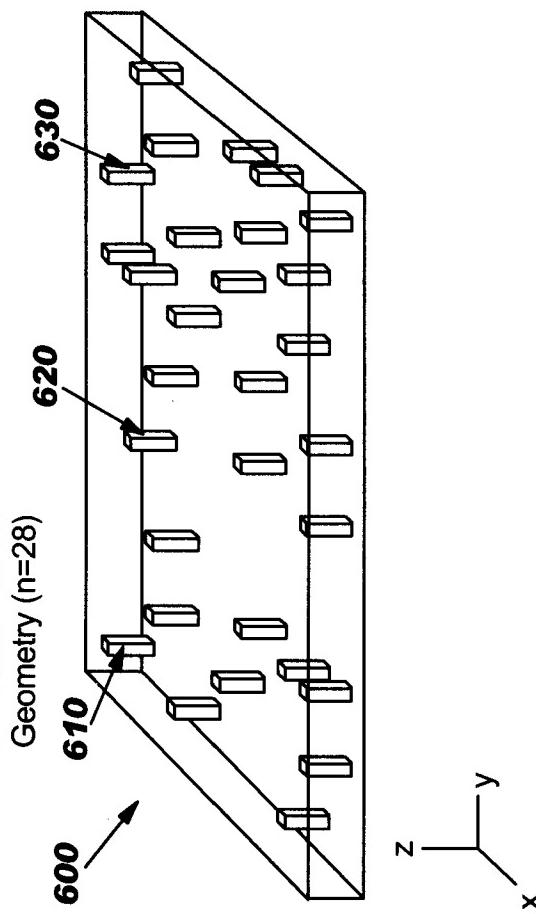
$$Z_0 = \sqrt{\frac{2L_{plate}}{C_{plate}}} \quad t_d = \sqrt{\frac{L_{plate} C_{plate}}{2}} = \tau / \sqrt{2}$$

$$L_{plate} = 5\mu / t$$



Intra-Cell Signal Vias Equivalent

FIG. 6A



Geometry (n=28)

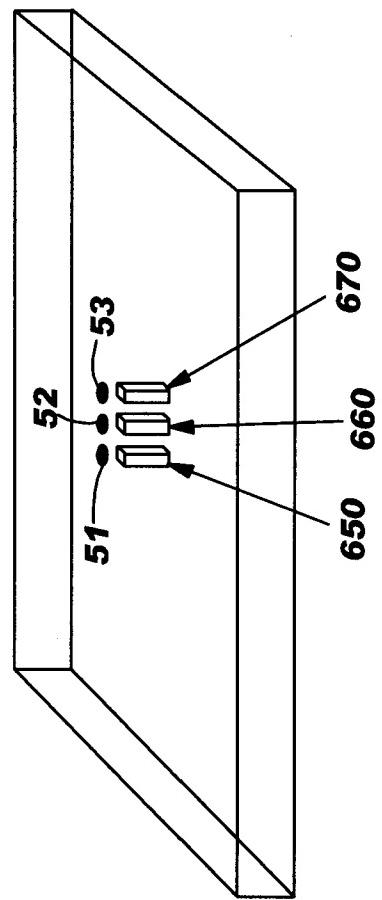
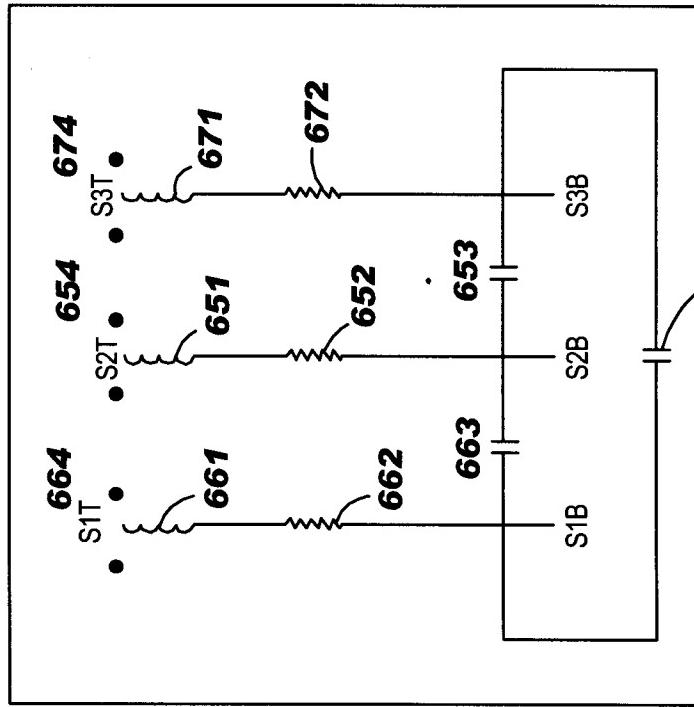
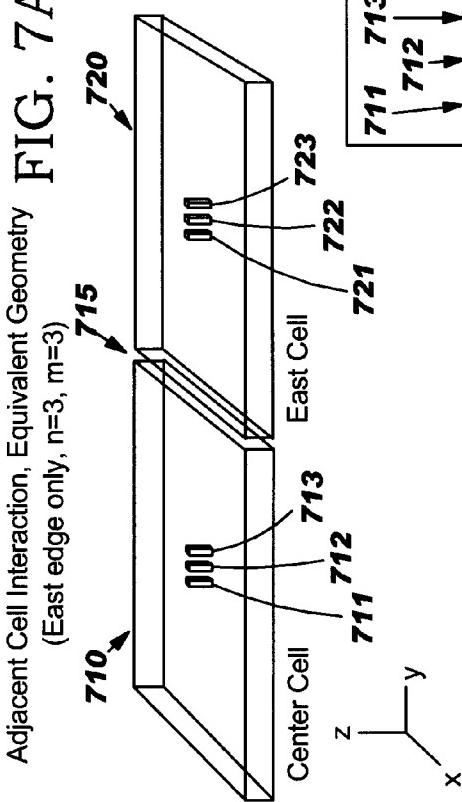
FIG. 6B
Geometry (n=28)

FIG. 6C

Equivalent Circuit (n=3)



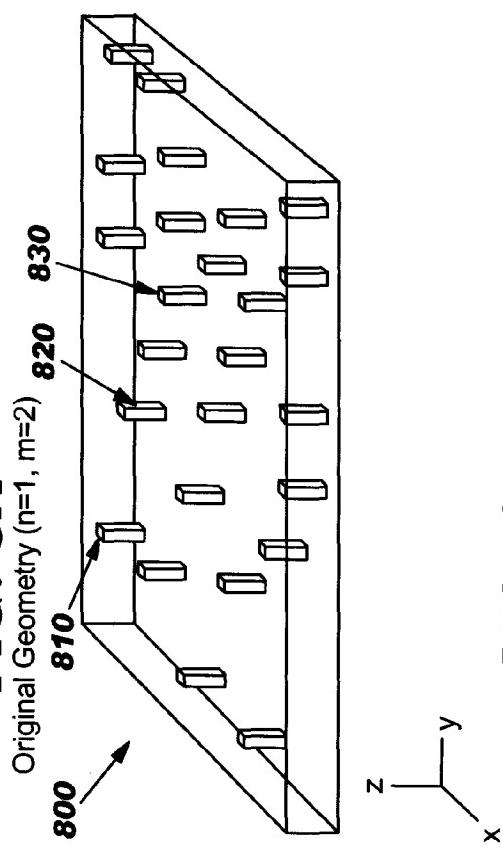
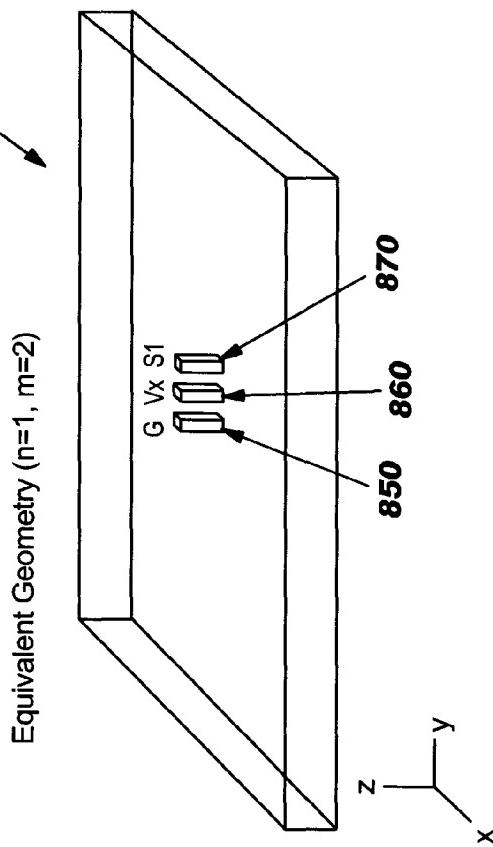
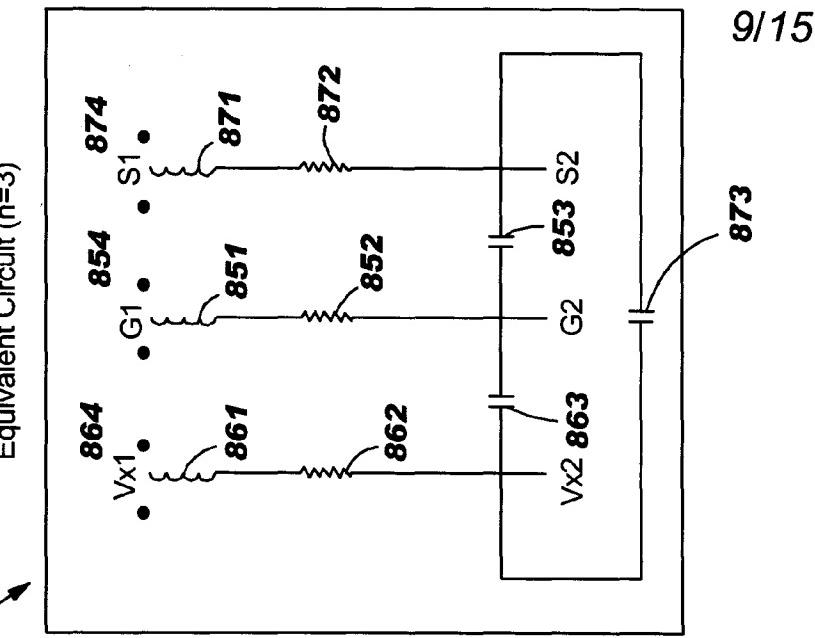
Adjacent Cell Interaction, Equivalent Ge
(East edge only, n=3, m=3)



Inter-Cell Signal
Vias Equivalent

FIG. 7A

Intra-Cell Signal and Power-Supply Vias Equivalent

FIG. 8A**FIG. 8B****FIG. 8C**

Adjacent Cell Interaction, Equivalent Geometry
(East edge only, n=3, m=3)

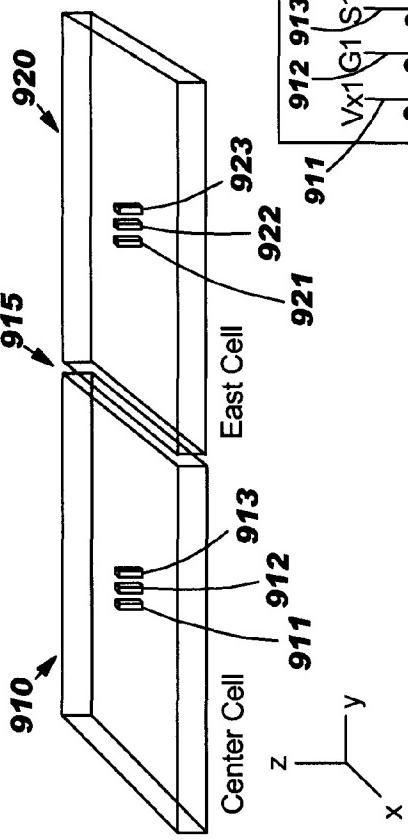
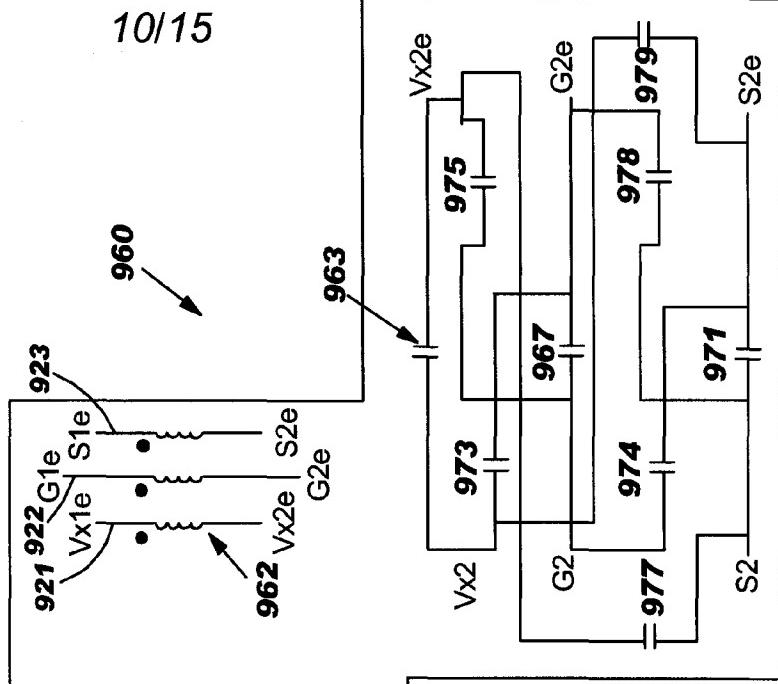


FIG. 9A

Inter-Cell Signal and Power-Supply
Vias Equivalent

FIG. 9B

Equivalent Circuit at Adjacent Edge (n=3, m=3)



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Intra-Cell Signal Wires Equivalent

FIG. 10A

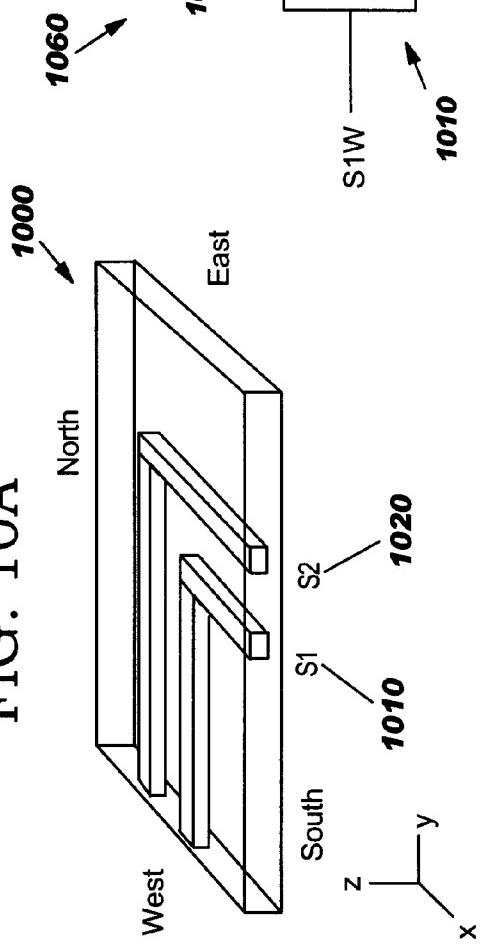
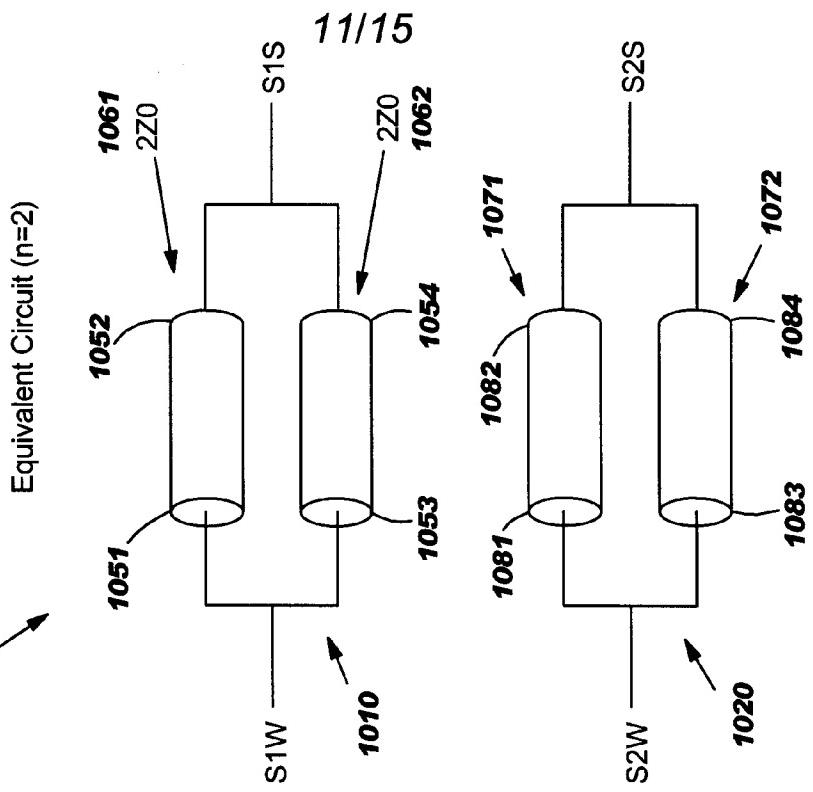


FIG. 10B



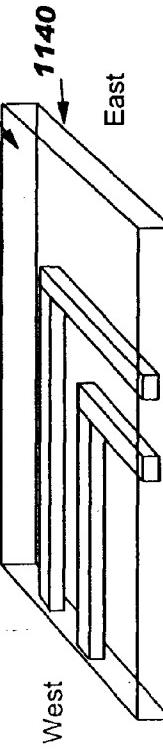
Intra-Cell Signal Wires to Power-Plane Equivalent

FIG. 11A

Geometry (n=2, m=2)

1100

North

1130

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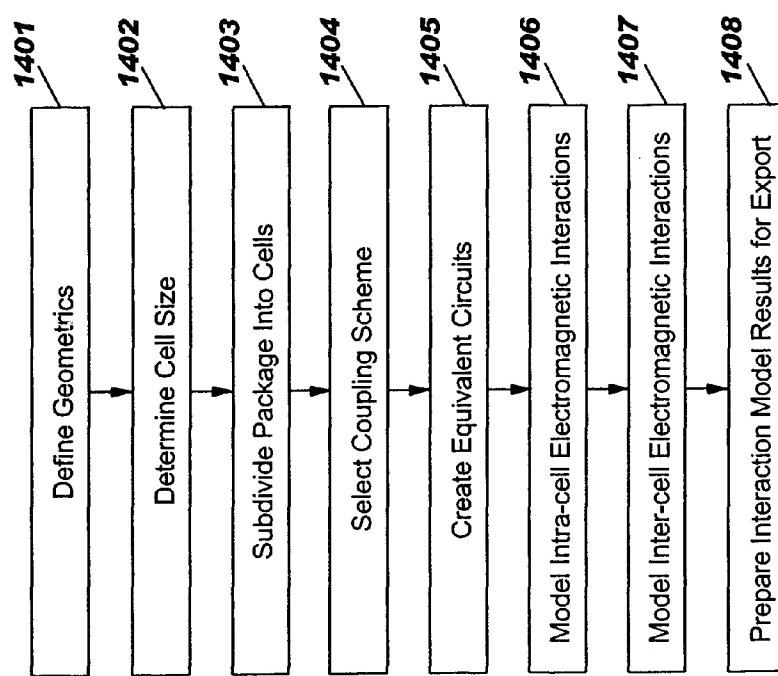
FIG. 11B

Equivalent Circuit (n=1, m=2)

1160V_t**1151****1152****1156****1157****1153****1154****1155****1156****1157****1158****1159****1160****1161****1162****1163****1164****1165****1166****1167****1168****1169****1170****1171****1172****1173****1174****1175****1176****1177****1178****1179****1180****1181****1182****1183****1184****1185****1186****1187****1188****1189****1190****1191****1192****1193****1194****1195****1196****1197****1198****1199****1100****1101****1102****1103****1104****1105****1106****1107****1108****1109****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1120****1121****1122****1123****1124****1125****1126****1127****1128****1129****1130****1131****1132****1133****1134****1135****1136****1137****1138****1139****1140****1141****1142****1143****1144****1145****1146****1147****1148****1149****1150****1151****1152****1153****1154****1155****1156****1157****1158****1159****1160****1161****1162****1163****1164****1165****1166****1167****1168****1169****1170****1171****1172****1173****1174****1175****1176****1177****1178****1179****1180****1181****1182****1183****1184****1185****1186****1187****1188****1189****1190****1191****1192****1193****1194****1195****1196****1197****1198****1199****1100****1101****1102****1103****1104****1105****1106****1107****1108****1109****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118****1119****1110****1111****1112****1113****1114****1115****1116****1117****1118</b**

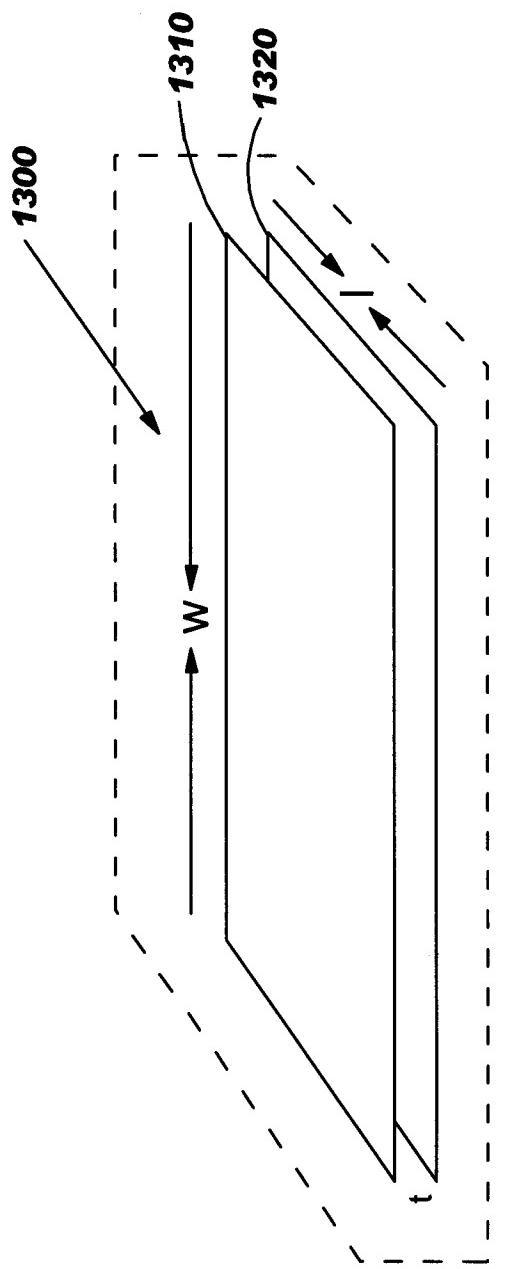
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FIG. 12
(Flow Chart) 1400



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FIG. 13A



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FIG. 13B

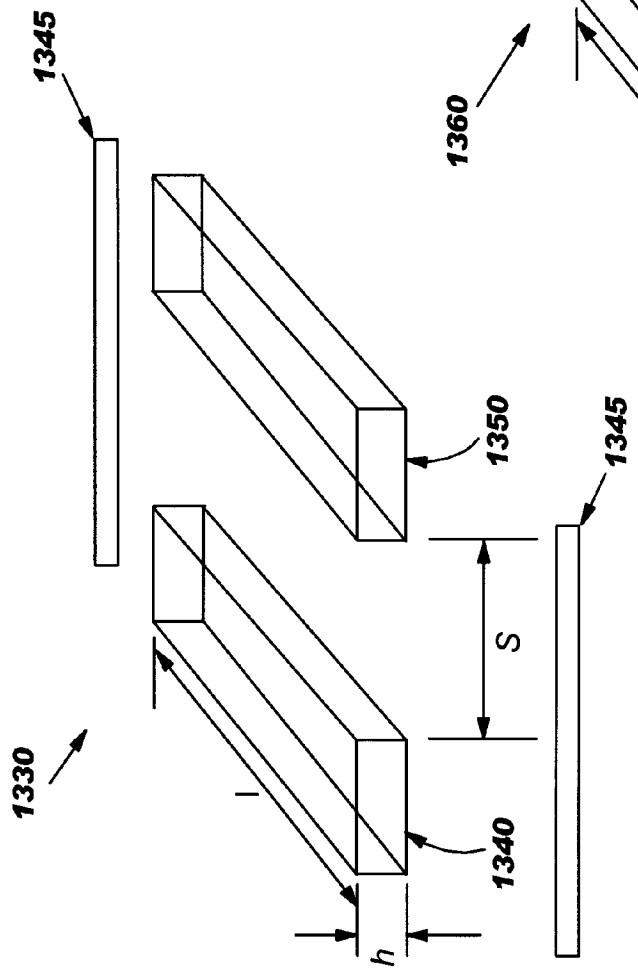


FIG. 13C

